Having thus described the preferred embodiment, the invention is now claimed to be:

1. A system for rendering an image representation, the system comprising:

a halftone processor;

a printer interfaced to the halftone processor; and

software means operative on the halftone processor for:

a) classifying an input pixel value in either a first classification or a second classification,

b) determining an output pixel value by error diffusing the input pixel value when the input pixel value is classified in the first classification,

c) determining a temporary output pixel value by stochastic screening the input pixel value when the input pixel value is classified in the second classification,

d) determining an adjusted input pixel value based on the input pixel value, the temporary output pixel value and a weighting value,

e) determining the output pixel value by error diffusing the adjusted input pixel value, and

f) rendering the output pixel value in the printer.

2. The system of claim 1, wherein the weighting value is based on the input pixel value.

3. The system of claim 1, wherein the weighting value is a function of the input pixel value.

4. The system of claim 1, wherein the adjusted input pixel value $i_a(x,y)$ is determined from the equation:

$$i_a(x,y) = i(x,y) + a[b_t(x,y) - i(x,y)],$$

where $b_t(x,y)$ is the temporary output pixel value, and (a) is the weighting value.

5. The system of claim 1, wherein a) includes determining whether the input pixel value represents at least one of a highlight region and shadow region of the image representation.

6. The system of claim 1, wherein a) includes determining whether the input pixel value is a predetermined fraction of a predetermined value.

7. The system of claim 1, wherein a) includes determining whether the input pixel value is a predetermined fraction of 255.

8. A method for rendering an image representation, the method comprising:

a) classifying an input pixel value in either a first classification or a second classification;

b) determining an output pixel value by error diffusing the input pixel value when the input pixel value is classified in the first classification;

c) determining a temporary output pixel value by stochastic screening the input pixel value when the input pixel value is classified in the second classification;

d) determining an adjusted input pixel value based on the input pixel value, the temporary output pixel value and a weighting value;

e) determining the output pixel value by error diffusing the adjusted input pixel value; and

f) rendering the output pixel value.

9. The method of claim 8, wherein the weighting value is based on the input pixel value.

10. The method of claim 8, wherein the weighting value is a function of the input pixel value.

11. The method of claim 8, wherein the adjusted input pixel value $i_a(x,y)$ is determined from the equation:

$$i_a(x,y) = i(x,y) + a[b_t(x,y) - i(x,y)],$$

where $b_t(x,y)$ is the temporary output pixel value, and (a) is the weighting value.

12. The method of claim 8, wherein step a) includes determining whether the input pixel value represents at least one of a highlight region and shadow region of the image representation.

13. The method of claim 8, wherein step a) includes determining whether the input pixel value is a predetermined fraction of a predetermined value.

14. The method of claim 1, wherein step a) includes determining whether the input pixel value is a predetermined fraction of 255.

15. The method of claim 1, further including:

g) repeating steps a)- f) for each pixel of the image representation.

16. A digital halftoning system comprising:

a processor;

a marking device interfaced to the processor; and

software means operative on the processor for generating an output pixel value to be rendered by the marking device, the output pixel value being generated by a stochastic screening routine, an error diffusion routine, or a selected combination of the stochastic screening routine and the error diffusion routine depending on an input pixel value.

17. The system of claim 16, wherein the output pixel value is determined by the selected combination of the stochastic screening routine and the error diffusion routine when the input pixel value represents one of a highlight region and a shadow region of an image representation being rendered, and when the input pixel value is a predetermined fraction of 255.

18. The system of claim 16, wherein:

a temporary output pixel value is produced by the stochastic screening routine,

an adjusted input pixel value is determined based on the temporary output pixel value, and

the adjusted input pixel value is error diffused to produce the output pixel value.

19. The system of claim 18, wherein the adjusted input pixel value $i_a(x,y)$ is determined from the equation:

$$i_a(x,y) = i(x,y) + a[b_t(x,y) - i(x,y)],$$

where $b_t(x,y)$ is the temporary output pixel value, and (a) is a weighting value.

20. The system of claim 19, wherein the weighting value is a function of the input pixel value.